

EXHIBIT A

CLAIMS

64. An intracorporeal device comprising an elongated member having a longitudinal length and means for causing a substantially linear change in bending stiffness over the entire longitudinal length of the elongated member, wherein the elongated member has a plurality of tapered segments configured to produce the substantially linear change in bending stiffness over the length of the member.

65. The device of claim 64 wherein the length of the elongated member has a continuously changing taper angle producing a curvilinear profile that is configured to produce the substantially linear change in bending stiffness over said length.

67. The device of claim 64 wherein each tapered segment has a substantially constant taper angle.

68. The device of claim 64 wherein the elongate core member comprises at least 3 to about 100 tapered segments.

69. The device of claim 64 wherein the elongated core member comprises a material with changing hardness in a longitudinal direction configured such that the change in hardness produces a substantially linear change in bending stiffness along the length of the core member.

70. The device of claim 64 wherein the elongated member tapers distally to a more flexible distal portion.

71. A guidewire comprising an elongate core member with at least one longitudinal section having a tapering diameter and a substantially linear change in bending stiffness over a longitudinal length thereof and defined substantially by the formula:

$$D_L = \left[\frac{64CL}{E\pi} + D_o^4 \right]^{\frac{1}{4}}$$

Where D_L is the diameter of the elongate core member at length L from a position of starting diameter D_0 , L is a length greater than zero, E is the modulus of elasticity of the core member material, and C is a constant that depends on the boundary conditions of the longitudinal section.

72. A guidewire as defined in claim 71, wherein said core member is formed of one of the group constituting stainless steel, NiTi alloys and combinations thereof.

73. A guidewire as defined in claim 71, wherein said core member has a proximal core section, said proximal core section being coated with a lubricious coating.

74. A guidewire as defined in claim 71, wherein said core member has a distal core section, said distal core section being coated with a lubricious coating.

75. A guidewire as defined in claim 71, wherein said core member has a distal core section, and a flexible body disposed about and secured to the distal core section.

76. A guidewire as defined in claim 71, wherein the guidewire comprises at least 3 to about 100 tapered segments.

77. A guidewire as defined in claim 71, wherein the guidewire comprises at least 5 to about 20 tapered segments.

78. A guidewire comprising an elongate core member with at least one longitudinal section having a substantially linear change in bending stiffness over a longitudinal length thereof and a moment of inertia defined substantially by the formula:

$$I_L = \frac{CL}{E} + I_o$$

Where I_L is the moment of inertia of the longitudinal section at length L from a position of starting inertia I_0 , L is a length greater than zero, E is the modulus of elasticity of the longitudinal section, and C is a constant that depends on the boundary conditions of the longitudinal section.

79. A guidewire as defined in claim 78, wherein said core member is formed of one of the group constituting stainless steel, NiTi alloys and combinations thereof.

80. A guidewire as defined in claim 78, wherein said core member has a proximal core section, said proximal core section being coated with a lubricious coating.

81. A guidewire as defined in claim 78, wherein said core member has a distal core section, said distal core section being coated with a lubricious coating.

82. A guidewire as defined in claim 78, wherein said core member has a distal core section, and a flexible body disposed about and secured to the distal core section.

83. A guidewire as defined in claim 78, wherein the guidewire comprises at least 3 to about 100 tapered segments.

84. A guidewire as defined in claim 78, wherein the guidewire comprises at least 5 to about 20 tapered segments.